Spring 5-12-2023

Implementation and Evaluation of a Diabetic Education Program

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Recommended Citation
Cole, Brianna, "Implementation and Evaluation of a Diabetic Education Program" (2023). *Doctor of Nursing Practice Scholarly Project*. 87.
https://digitalcommons.pittstate.edu/dnp/87

IMPLEMENTATION AND EVALUATION OF A DIABETIC EDUCATION PROGRAM

A Scholarly Project Submitted to the Graduate School
in Partial Fulfillment of the Requirements
for the Degree of
Doctor of Nursing Practice

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May 2023

IMPLEMENTATION AND EVALUATION OF A DIABETIC EDUCATION PROGRAM

An Abstract of the Scholarly Project by
Brianna Renae Cole

The purpose of this project was to help create and evaluate a diabetes education program that was accessible to diabetic patients over the age of 18. This project was conducted through Enhanced Healthcare of the Ozarks clinic with the guidance and approval of the American Diabetes Association. There is currently one other diabetic education program available in Northwest Arkansas. The theme of this project was to provide education in individual and group settings regarding medication use, emergency situations, nutritional choices, and self-management techniques. These patients learned meal planning strategies, proper nutrition choices, functions of the body, self-management techniques, emergent situation choices, community outreaches, and more. The conclusion of the study showed an increase in self-management skills, better patient-provider relationship in terms of communication, an increase in knowledge of the diabetes pathology, and an overall increase in quality of life for each patient.

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INTRODUCTION

Diabetes is a growing problem in America and is a growing concern to healthcare providers. It is estimated that there are about "382 million people with diabetes mellitus (DM) nowadays, and that in 2035 this number will reach 471 million. In the 21st century, DM will be responsible for about 5.2% of deaths worldwide, becoming the fifth leading cause of death" (Cavicchioli et al., 2019, p. 171). The ever-growing number of diabetics is concerning for being considered a global pandemic. The benefit of a completed diabetic education program has been proven to be successful time after time, yet the limited number of participants as well as limited number of available programs tends to remain the greatest threat to success. It is important to understand the benefit of a diabetic education program and the impact that effective teaching has on changing the course of someone's life.

Description of the Clinical Problem

Diabetes is truly a multi-faceted disease that has multiple moving parts accompanying it. According to the CDC (2022), diabetes is defined as "a chronic long-lasting health condition that affects how your body turns food into energy." As healthcare workers, this is known to be somewhat true, but when thinking of the diabetes disease process, there is much more to it. Olson and Rosenberg (2019) further define diabetes as being a disease process that “requires a person to integrate many daily choices regarding food, physical activity, and medications” (p. 1). They go on to state that the disease process also requires the patient to “feel competent in his or her self-management skills, which requires education” (Olson & Rosenberg, 2019, p. 319). Diabetes self-management education (DSME) is the “process of facilitating the knowledge, skill, and ability necessary for diabetes self-care” (Powers et al., 2016, p. 70). Grasping a patient’s understanding of their diabetes is a key factor in their overall outcomes.

Research has proven repeatedly that patients with diabetes need a tailored plan to fit their lifestyle. As mentioned before, diabetes is a multi-faceted disease that has multiple moving factors. For patients, this means they must completely re-learn all their lifestyle habits to be successful at managing their disease process the correct way. Diabetic education programs have been shown to be successful in helping diabetics manage their disease process, but they tend to have a stigma that surrounds them. This stigma leads to ineffective communication between participants and instructors, unmet standards of the program, lower participation from participants, and a higher drop-out rate of participants in the programs. Hill (2017) states that diabetes management does not just rely on taking medication as prescribed, so patients need to know how to manage the condition in response to the daily variation in routine and circumstances. The success of self-management and learning from these diabetic education programs relies on gaining knowledge, developing skills and being confident that they can put those two things into use. Completing these tasks takes time and needs support.

The reliable research data is limited on the actual number of diabetic education programs worldwide. Studies show that most hospitals have a diabetic educator available to them and that primary care clinics/providers should also take the time to explain this disease process to patients. With this comes the lack of ongoing communication as well as accountability. After directly interviewing a physician locally, the feedback concluded that physicians do not have a high reimbursement rate for primary care visits and therefore schedule multiple visits within a decreased time frame to increase revenue. With this plan comes a decrease in time to provide adequate education needed for their patients.

Significance

Creating a diabetic education program in northwest Arkansas through Enhanced Healthcare of the Ozarks reaps benefits into each category including patients, nursing, and society. This phenomenon of interest highlighted an area of need in the community to an extent so large that there were already patients waiting to get signed up when the clinic got an accredited program. Diabetes is the pandemic America is currently facing, yet it does not get the funding, publicity, or resources needed for these patients to change their lives. Healthcare members understand that managing diabetes is not a linear process and that it requires many different areas of patients' lives to be changed and managed. Diabetes self-management education is the "process of facilitating the knowledge, skill, and ability necessary for diabetes self-care" (Powers et al., 2016, p. 70).

Patients

The significance of the DNP scholarly project impacting the patient as an individual stem from the diabetic education program being tailored to each person. For a patient to feel competent in their self-management skills, they require education (Olson & Rosenberg, 2019). It is well known that a patient must have a diagnoses and treatment plan that is directly tailored to their needs for them to be successful and to begin the healing process. There is currently one diabetic education program available to diabetics in the surrounding area. Having a lack of programs in the area leads to decreased quality of life for those with diabetes and more programs are necessary to stem the tide of current rising diabetic numbers. This is the way to change the life a patient living with diabetes.

Nursing

When reviewing curriculum and standards that must be met to show validity of the program as well as make the clinic more reputable, there must be a certified diabetic educator teaching the courses. This plays a role when it comes to significance in nursing because it shows that nurses must have continued education as well as a certification in diabetes management and education. At the launch of the program, there was a master diabetic educator, which was the nurse practitioner as well as a registered dietician who was brought into the clinic post-implementation of the program. There was also a diabetic coordinator who kept the clinic staff up to date on protocols as well as certifications. Advancing the nursing profession by increasing nurse practitioner knowledge as well as direct patient care knowledge will only increase patient satisfaction as well as patient adherence to the program itself. This knowledge can be passed on to primary care facilities and act as a referral for many primary care providers.

Society

Diabetes is the growing pandemic that is demanding attention. Knowing that 10 years from now, over 470 million people worldwide will be diagnosed with diabetes, and yet the time educating these patients after diagnoses is slim to none, is frightening (Cavicchioli et al., 2019). Creating even just one more platform for patients to gain education through can help shape their lives, their family’s lives, their friends’ lives, and then continue to grow and change the direction society is currently moving to. Due to the complexity of managing the comorbid conditions, the amount of budget expenditure continues to rise for many healthcare systems. However, studies have demonstrated that “through increase adherence of an education program, overall healthcare costs can be reduced and even though diabetic treatment is multifactorial, multiple aspects can be addressed by physicians” (McClure et al., 2020, p. 122). Even implementing just one single diabetic program can help reduce patient costs as well as reduce healthcare costs when emergencies happen or it can help to improve patient knowledge, and in turn, prevent more ER visits as well as overuse or underuse of medications. All the benefits that reap from a diabetic education program involve society as a whole and are truly the foundation for changing the direction of our current diabetic crisis.

Specific Aims and Purpose

The specific aim of this DNP scholarly project was to help design a diabetic education program that would assist newly diagnosed and lifelong diabetic patients to learn how to improve their knowledge on their disease process as well as improve overall health outcomes. The purpose of this project was to increase the knowledge base of diabetic patients and improve their overall quality of life by (a) providing individual and group educational sessions that are tailored to specific patient needs as well as follow the American Diabetes Association guidelines, (b) determining an increase in education level by providing a survey before and after with questions that relate to the disease process itself, and (c) providing an online platform for each patient that allows for additional educational material outside of classes, direct messaging access to diabetic certified education providers, and ideas for extra resources available in the community for diabetic patients. This program is a multi-disciplinary action plan that is meant to change the lifestyle habits of patients living with diabetes in hopes to allow them to self-manage their diabetes.

Theoretical Framework

The selection of this theoretical framework comes with a passion for preventative medicine. Watson's philosophy and science of caring closely relates to the concepts that are trying to be moved forward in the DNP project. The overview of Watson's theory is how nurses provide care to their patients. Caring is central to nursing practice and promotes health better than a medical cure or diagnosis. Watson believes in the holistic approach and that the holistic approach is central to the practice of caring in nursing. The theory has four major concepts: human being, health, environment/society, and nursing. This theory works hand in hand with the nursing theory, just from a more holistic viewpoint.

Watson's model has seven major assumptions, with six of them being viable to be used for this project. They are as follows: “

> 1.Caring consists of caritive factors that result in the satisfaction of certain human needs, 2. Effective caring promotes health and individual or family growth, 3. Caring responses accept the patient as he or she is now, as well as what he or she may become, 4. A caring environment is one that offers the development of potential while allowing the patient to choose the best action for him or herself at a given point in time, 5. A science of caring is complementary to the science of curing, 6. The practice of caring is central to nursing” (Petiprin, 2020).

Watson's model also contains the 10 caritive factors that build the "philosophical foundation" of the theory that helped to build the foundation for this DNP project.

Project Questions

This research study attempts to answer the follow questions:

1. Do patients with diabetes who attend a twelve-week diabetes education program experience an increased level of knowledge regarding the disease process once the course is completed?
2. Do patients with diabetes who attend a twelve-week diabetes education program experience an overall better quality of life than before they completed the program?
3. Do patients with diabetes who attend a twelve-week diabetes education program report higher self-management skills after the program rather than before the program?
4. Do patients with diabetes who attend a twelve-week diabetes education program report a better patient-provider relationship in terms of communication after the program rather than before the program?

Conceptual Definitions

Adherence: "extent to which the patient’s behavior matches agreed recommendations from the prescriber" (Chakrabarti, 2014).

Chronic Conditions: “Diseases which have one or more of the following characteristics: they are permanent, leave residual disability, are caused by non-reversible pathological alteration, require special training of the patient for rehabilitation, or may be expected to require a long period of supervision, observation or care” (Sabate, 2003).

Diabetes mellitus: "a multi-faceted disease that requires a person to integrate many daily choices regarding food, physical activity, and medications" (Olson & Rosenberg, 2019).

Diabetes Self-Management Education: "the process of facilitating the knowledge, skill, and ability necessary for diabetes self-care" (Powers et al., 2016).

Insulin: “a hormone needed to allow sugar (glucose) to enter cells to produce energy” (Author, 2021).

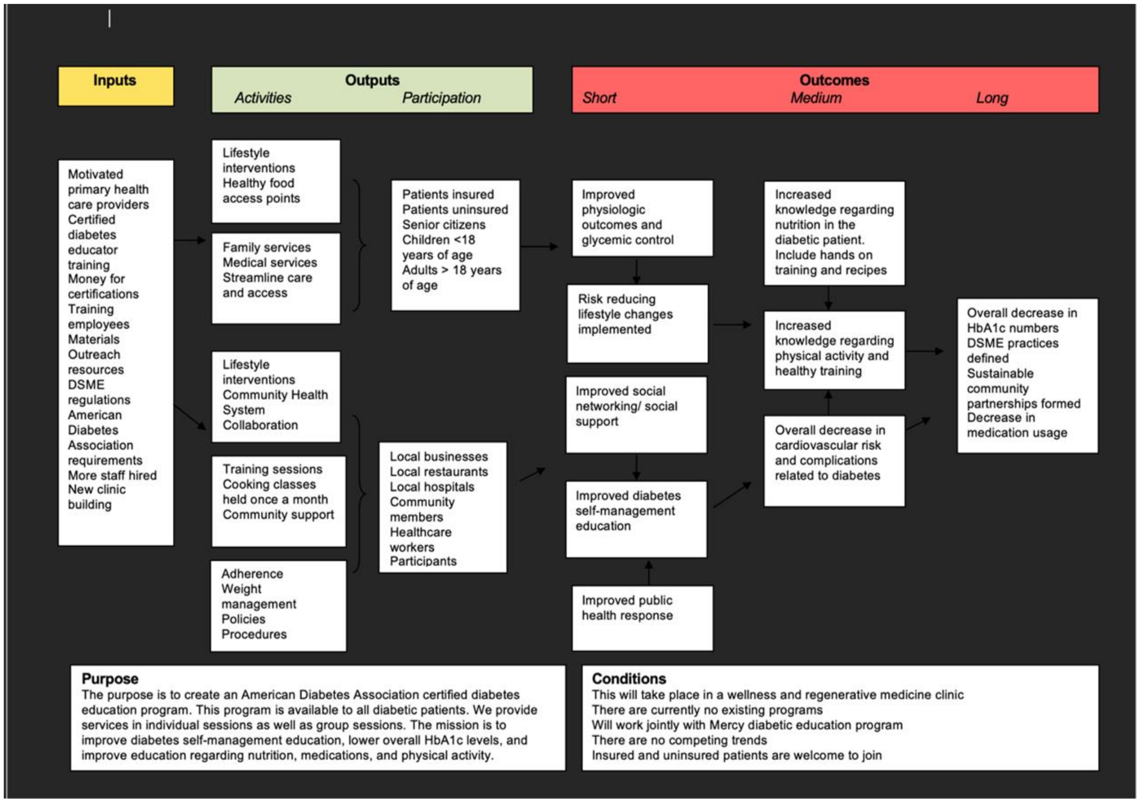
Type 1 Diabetes: Once known as juvenile diabetes or insulin-dependent diabetes, is “a chronic condition in which the pancreas produces little or no insulin” (MFMER, 2021).

Type 2 Diabetes: is an “impairment in the way the body regulates and uses sugar (glucose) as a fuel. This long-term condition results in too much sugar circulating in the bloodstream. There are primarily two interrelated problems at work: your pancreas does not produce enough insulin —— and cells respond poorly to insulin and take in less sugar” (MFMER, 2021).

Logic Model

Figure 1

Logic Model



Purpose
The purpose is to create an American Diabetes Association certified diabetes education program. This program is available to all diabetic patients. We provide services in individual sessions as well as group sessions. The mission is to improve diabetes self-management education, lower overall HbA1c levels, and improve education regarding nutrition, medications, and physical activity.

Conditions
This will take place in a wellness and regenerative medicine clinic
There are currently no existing programs
Will work jointly with Mercy diabetic education program
There are no competing trends
Insured and uninsured patients are welcome to join

Summary

This scholarly project intended to educate diabetics through an educational program provided to them by trained diabetic educators. This class was covered by most insurances for the patient to make it easier financially on them. The aim was to increase quality of life by providing information regarding treatment options, nutrition, physical activity, and providing community resources for these patients. This researcher is asking questions regarding an increase in knowledge foundation, quality of life, higher self-management skills, and a better provider-patient relationship after completing this program. According to previous literature, patients who complete programs such as one that is being produced tend to have a better understanding of their diagnosis as well as the proper tools to manage it at home. With that also comes barriers and recommendations this study had to take into consideration.

With the use of Watson's model, each patient was viewed as an individual and in a holistic manner with "caring" being the core value of each patient. Understanding each patient's baseline, needs, wants, and education level helped them to be more open to completing the program. Also, caring about each patient and investing in each patient as an individual helped keep them engaged, participating, and learning. Creating a successful diabetic education program was the goal of this project. This was completed using the American Diabetes Association guidelines as well as having diabetic educators on staff. There are many opportunities to learn and expand on the knowledge known about this topic as well as what was tested during this study.

Chapter II

REVIEW OF THE LITERATURE

Diabetes is a growing problem in America and is a growing concern to healthcare providers. Diabetes is currently the seventh leading cause of death in America (American Diabetes Association, 2017). The ever-growing number of diabetics is concerning for being considered a global pandemic. The benefit of a completed diabetic education program has been proven to be successful time after time, yet the limited number of participants as well as limited number of available programs tends to remain the greatest threat to success. It is important to understand the benefit of a diabetic education program and the impact that effective teaching has on changing the course of someone's life.

This literature review provides an overview of what is currently known about diabetic education programs, clinic studies showing direct data reviewing educational programs, as well as give an insight to the benefit of using effective teaching strategies. This review will be built around Watson's 1979 philosophy and science of caring. It will also review those variables that have been linked to an increase in diabetic understanding as well as the relationship between understanding the disease process and using an educational program to complete that task.

Literature Synthesis

A systematic search of the literature was performed using the electronic databases CINAHL Plus with Full Text and Google Scholar. Additionally, the reference lists from each of the articles identified as relevant to this literature review were examined to identify additional references to review. Search terms included diabetes, self-management, educational program, DSME, and many more. With these search terms, nearly 500 articles were available for research purposes. Narrowing down the research included finding articles related to DSME as well as completed educational programs. Other criteria used for narrowing down the literature included articles within the last five to ten years, be in the English language, come from reputable sources, and be relevant to methods used in the United States. Other topics for the search engine included facilitators and barriers to a diabetic education program.

Diabetic education programs and the importance of effective communication were the primary concepts reviewed in this synthesis. The concepts of creating a well-designed program, availability of a program, effects of non-adherences, and barriers to educational programs will be identified and understood based on what is currently known. A brief secondary review of factors including education for patients as well as education for providers is also reviewed regarding the management and expectations of a diabetic disease process.

Discipline of Nursing

National standards were designed by a task force that was convened by the American Association of Diabetes Educators and the American Diabetes Association in the summer of 2006. This task force included a person with diabetes, several health services researchers/behaviorists, registered nurses, registered dietitians, and a pharmacist. They reviewed and implemented 10 new DSME standards based on five overriding principles that include

> diabetes education is effective for improving clinical outcomes and quality of life, at least in the short term, DSME has evolved from primarily didactic presentation to more theoretically based empowerment models, there is no one "best" education program or approach: however, programs incorporating behavioral and psychosocial strategies demonstrate improved outcomes: additional studies show that culturally and age appropriate programs improve outcomes and that group education is effective, ongoing support is critical to sustain progress made by participants during the DSME program, and behavioral goal setting is an effective strategy to support self-management behaviors. (Funnell et al., 2008, p. S89)

The standards that were established from these principles are the "gold standard" for diabetes self-management education and what an education program should entail to be successful. The standards include requirements such as having an instructor that has recent education and experiential preparation in education and diabetes management or will be a certified diabetes educator and will obtain regular continuing education in the field of diabetes management and education (Funnell et al., 2008). These standards are in place to help guide a successful diabetic management plan and to provide legitimacy in the program details.

Educational Research

The research on diabetic education programs is very diverse as well as very broad in direction of each study. This literature review provides examples of quasi-experimental studies, in-depth interviews, quantitative and qualitative studies, and an interventional quantitative study. These studies review participant participation, non-adherence reasons, the impact of participating in an educational program, and patients' perception of their disease. Like mentioned before, when reviewing diabetic educational programs, the list is limitless but has been narrowed down to only review adherence, communication, barriers, and the impact of effective teaching on these patients' lives.

Almeida et al. (2019), reviewed the efficacy of an empowerment-based education program in self-efficacy perceptions in patients with type 2 DM (p. 35). Their conclusion over the study was that

> the participants of the Living Harmoniously with Diabetes program obtained a higher self-efficacy perception, meaning a greater capacity to set up objectives, define positive disease management strategies, and use resources, than the patients who did not participate in the educational program (Almeida et al., 2019, p. 40).

The study revealed patients felt involved in their plan of care, which made the participants feel encouraged and willing to learn. This in turn "encouraged their decision-making and problem-solving skills, through searching and applying adaptive strategies" (Almeida et al., 2019, p. 40).

A second study that was completed used in-depth interviews of patients living with type 2 diabetes. This study was created to view patients' perceptions of their disease and their personal experience with the disease itself. The interviews showed data results such as who viewed themselves as healthy versus ill and then how each of them viewed the benefit of an educational program (Laursen et al., 2017). Participants that categorized themselves as

> healthy on the basis of diabetes-related restrictions in their daily lives described more benefits of patient education program than did those categorized as ill. They more readily implemented diet and exercise guidelines, valued social interactions during programs, and perceived facilitators more positively" (Laursen et al., 2017, p. 1045).

This is an example of a patients' perception of their health and how patient's view education.

Effectiveness of Educational Programs

For years, studies have documented "the clinical benefits of open and interactive physician-patient communication in managing chronic disease" (McClure et al., 2020, p. 121). It is shown that patient satisfaction rises in direct correlation with the amount of information relayed from the doctor in specifics of treatment plan and reasoning behind the treatment plan. Therefore, "patients are more likely to have poor control of their diabetes and other chronic conditions if they are less involved in their treatment plan and less engaged with the physician" (McClure et al., 2020, p. 121). An observational study was done by McClure et al. (2020) to describe the relationship between physician communication and glycemic control. Patients were "more likely to have a lower HbA1c level when physicians assessed the patient's understanding of a change in the treatment plan and provided further explanation if the patient did not fully comprehend the changes" (McClure et al., 2020, p. 122).

Barriers to Adherence to a Diabetic Management Plan

A variable explained in the scholarly project is the definition of barriers as it compares to the completion of a diabetic education program. A barrier is defined by *Merriam-Webster's Online Dictionary* (n.d.) as "a natural formation or structure that prevent or hinders movement or action." According to Patel (2018), the most frequently reported barrier for not completing a diabetic education program included the fact that "the word 'education' conjures thoughts of school, which they may have never enjoyed." Even just saying the word 'education' can have a negative impact on patients. This word can come across as a trigger word to patients who may have never gotten through school or never enjoyed school in the first place. Educational programs are meant to be beneficial to patients, but the educational level of patients also plays a role in how the educational programs are designed. Healthcare providers must be aware of their body language, communication style, and educational level of their participants to successfully reach and benefit their patients. Creating content and delivering exceptional educational content truly can be the difference between life or death with diabetic patients. Other barriers to completing a program included "absence of company, difficulties to participate in consultations due to work, personal issues, other serious health problems, participation in another quality-of-life program and distance from home" (Cavicchioli et al., 2019, p. 173). These barriers all must be addressed and adapted to each patient to help ensure understanding and adherence to an educational program.

Factors shown to be critical to the occurrence of the non-adherence of diabetes management include a lack of communication, a lack of ongoing support, and the fact that diabetes is a complex disease process that requires an entire lifestyle change to help manage. Many authors address this issue in which McClure (2020) explains that "according to the WHO, developed countries average only a 50% adherence to long-term therapy for chronic illnesses" (p. 121). Due to the complexity of managing the comorbid conditions, the amount of budget expenditure continues to rise for many healthcare systems. However, studies have demonstrated that "through increase adherence, overall healthcare costs can be reduced and even though diabetic treatment is multifactorial, multiple aspects can be addressed by physicians" (McClure et al., 2020, p. 121). A key factor discussed that ties alongside the theory of lack of communication in that "patients who felt they experienced hurried communication with their doctor were more likely to miss insulin injections and follow up appointments" (McClure et al., 2020, p. 122). "Hurried" communication included doctors that used complex words, spoke too quickly, ignored what the patient told them, and appeared distracted or bothered if there were multiple questions asked about the disease process. Poor treatment adherence also has been related to "the complexity of the treatment regimen" (McClure et al., 2020, p. 122). Diabetes is not a disease process that you give a patient a single medication that they take daily for the rest of their life and the condition is controlled. These patients must learn nutritional factors, exercise precautions, insulin education, and more.

According to the WHO (2003), developed countries average only a 50% adherence to long-term therapy for chronic illnesses. Patients who experienced a "hurried" sense of communication between them and their physician showed an overall higher HbA1c level and poor insulin adherence (McClure et al., 2020). A survey was conducted on adherence to treatment plans and communication between providers. Among patients who did not receive physician counseling or printed information or attend diabetic education classes, “only 48% reported being adherent to medication” (McClure et al., 2020, p. 121). Poor treatment adherence has been directly linked to the complexity of the treatment regimen.

Certain demographic factors can have a negative impact on glycemic control and proper physician communication. Other barriers to adherence to educational groups include health literacy levels, relativity of education to the patients, and the time demands that the disease process itself already has over a patient. More barriers include patients own perception of their illness and their personal desire to change their lifestyle to create an overall better quality of life. Noted prior, “absence of company, difficulties to participate in consultations due to work, personal issues, other serious health problems, participation in another quality-of-life program and distance from home” were all reasons stated by patients in a qualitative study as to reasons they did not start and/or complete a diabetic educational program (Cavicchioli et al., 2019, p. 173).

The cost of not successfully managing diabetes can be high. According to Hill (2017), episodes of hypoglycemia and hyperglycemia affect quality of life and can be life-threatening, but the risk of long-term, life-changing complications such as retinopathy, nephropathy and amputation increases with sub-optimal control” (p. 1). Although chronic conditions are among the most common and costly health problems, they are also largely preventable and can be effectively controlled.

Benefits of a Diabetic Management Plan

Studies show more than “95% of diabetes care is performed by patients, who must have the appropriate self-management knowledge and skills, and because of this, patient education programs have become an integral part of diabetes care” (Laursen et al., 2017,

p. 1039). The importance that self-management and knowledge on the disease process itself shows should be having more of an effect on healthcare providers as well as support for educational programs that help to promote this management style. As mentioned before, “diabetes self-management education is the process of facilitating the knowledge, skill and ability necessary for diabetes self-care” (Olson & Rosenberg, 2019, p. 429).

Education for providers stems from an article where Patel (2018) found “low confidence among junior doctors in managing patients with diabetes.” Providers must be equipped with the knowledge to deal with newly diagnosed diabetics as well as take the time to get them the necessary referrals. Becoming a diabetic certified educator is one way that education for providers could be increased as well as show an increase in patient learning and an increase patient-provider relationship. Education in the workplace is ever-changing and always available for providers that are willing and able to expand their knowledge base to help work towards evidence-based practice and what is most beneficial/helpful for each patient.

According to Martin (2013), studies showed that patient outcomes improved, and healthcare costs were reduced once patients attended a diabetes education program. Magee (2014) provided insight that diabetes self-management education improved patient knowledge, self-care behaviors, patient outcomes, and reduced costs. Gaining knowledge about diabetic management helps patients to better understand their disease process and in turn help them to learn to better control it. Providing patients with community outreach opportunities, educational services, and group support allows for personal growth of each patient.

Components of an Effective Educational Program

A collection of studies indicates that areas of focus in diabetes education include healthy eating, nutrition, physical activity, problem solving, reducing long-term complications, proper medication compliance and healthy coping. Successful management of this disease includes diabetes self-management education (DSME), diabetes self-management support (DSMS), nutrition therapy, physical activity, counseling on smoking cessation, and psychosocial care (ADA, 2016c). Lastly, having a diabetic educator to facilitate the conversation and educational topics related to diabetes is necessary by ADA standards as well as patient success.

Summary and Future Directions

Diabetic education programs, the importance of effective teaching and communication, and perceptions of patients/providers has all been thoroughly described in the nursing literature in terms of what is currently being utilized and what studies have been done. Descriptive studies show that patients who participate in a diabetic educational program and have a healthy mindset show great results and a beneficial outcome regarding self-management of their diabetes. Studies regarding diabetic education range from non-adherence issues, to how participants view their disease process, to what patients want in an educational program. The dynamic of each study is different but allows for a lot of change and a lot of growth for each program that is designed. Time after time, the outcome of using a diabetic education program never came back as a negative. The importance of tailoring specific education to patient populations as well as having effective verbal and non-verbal communication with patients played the biggest factor in adhering to mediation regimens, lifestyle changes, and adherence to educational programs.

Moving forward, the American Association of Diabetes Education and the American Diabetes Association has developed very strict criteria that must be met to be an accredited diabetic education program. This allows for standards of the program to be met, but also allows for change and growth within the company creating the program and allows for creativity as well as patient interaction and involvement to tailor the program to each population group. This will help to set minimum standards and maybe deviate away from the broadness of programs that are developed as well as design studies.

Chapter III

METHODOLOGY

Identifying methodology and creating a plan of action is crucial for any research project. Chapter three of the Doctor of Nursing practice scholarly project highlights and outlines all specific moving parts related to project design, participants, procedures, human safety, and more. Having a detailed plan of the research project helped it to be evaluated and replicated. Following the doctor of nursing practice guidelines, the methodology section “is used to describe how the project will be done, connecting it to the project purpose. The project plan is to be described in detail, including ethical aspects in implementing the improvement, human subject considerations and a description of the participants (if applicable), the setting, the tools/instruments used to evaluate the phenomenon of interest, the data collection or process improvement/intervention (if included), and how the work will be evaluated” (Moran et al., 2020 p. 287).

Project Design

The purpose of this project was to help create and implement a diabetic education program focused on teaching techniques for self-management to Enhanced Healthcare of the Ozarks patients. It also included evaluation of the effectiveness of the program. Using the American Diabetes Association (ADA) guidelines for implementation and evaluation helped serve as an accreditation tool for the clinic. Working behind the scenes to gather information needed to begin the program was difficult and time consuming. The ADA requires a substantial amount of information and community outreach to be done before the program could be implemented. The ADA also required there to be a diabetic educator who meets specific competency and continuing education requirements in the building to provide the information to participants given throughout the program (Armbrecht, 2020). Understanding ADA guidelines and requirements as well as becoming a diabetic “expert” regarding diabetes self-management was crucial to the success of this project.

The program was a twelve-week program that set up as a pre-program survey, educational sessions, post-program survey that evaluated eight common outcomes which were: (a) goal setting, (b) glucose monitoring, (c) perception of patient-physician communication, (d) appropriate use of clinical services, (e) laboratory test results, (f) medication adherence, (g) quality of life and (h) satisfaction (Armbrecht, 2020) as well as seven self-care behaviors which included: (a) healthy coping, (b) healthy eating, (c) being active, (d) taking medications, (e) monitoring, (f) reducing risk, and (g) problem solving (ADCES, 2021). Data collection included the participant pre- and post-program survey that allowed participants to elaborate on their feelings regarding their diabetes self-management skills, as well as a patient demographic questionnaire.

This program was designed as a quantitative research project. Quantitative projects collect numerical data to explain phenomena. According to Ludwig & Johnston (2016), “this type of research might use surveys, questionnaires, or polls and then uses mathematically based methods to analyze the collected data” (p. 713). For the sake of this research, questionnaires and surveys were utilized for data collection. This helped the facilitator to find patterns, evaluate predictions, as well as potential cause-effect relationships through the evaluation of the diabetes education program. The participants were provided ordinal data for collection and research using the survey collection method. This gave the facilitator a way to interpret and compare data pre and post program. The information was evaluated using the Likert scale, comparing pre- and post-program survey answers, and evaluating it with averages and response rates. The other way data was interpreted was using descriptive statistics frequencies. According to Hayes (2023), the main purpose of descriptive statistics is to provide information about a data set and the three main types of descriptive statistics are frequency distribution, central tendency, and variability of a data set. Hayes (2023) goes on to explain that descriptive statistics refers to the analysis, summary, and communication of findings that describe a data set.

Sample Population

The population consisted of ten Type 1 and Type 2 diabetic patients that were living around the community of interest. Most of the participants had lived in the area for longer than six years, with a handful only living there one to two years. These patients were willing to learn about diabetes self-management and were willing to participate in the study. These participants were limited to primary care patients of the APRN due to the extensive nature of managing diabetes. Most of the participants had been recently diagnosed with diabetes, with only a couple being lifelong diabetics. These participants had to be older than 18 years of age and not be involved with any exclusion criteria. Facilitating the implementation of the program into Enhanced Healthcare of the Ozarks clinic allowed for diabetic patients that already attend the clinic first access to participating.

Recruitment

The recruitment process was solely word of mouth to the diabetic patients at their routine visits or phone call to see if they are willing and determined to participate. If there were not enough participants willing to participate, the offer would extend to patients that are not primary care patients of providers at the established clinic. With the growing number of diabetic patients and lack of diabetic education programs in the area, the recruitment process was quite simple. Since the diabetic education program is also brand new, the number of participants had to be capped at 10 for the first cohort.

Inclusion & Exclusion Criteria

Inclusion criteria for the project is any Type 1 or Type 2 diabetic patient that was willing to learn more about self-managing their diabetes. This inclusion criteria also extended to patients who are already primary care patients of the APRN. Exclusion criteria for this study involved the IRB special considerations population, which is identified as any person under the age of 18, prisoners, fetuses, pregnant women, or human in vitro fertilization.

Protection of Human Subjects

The plan for this project, as a program evaluation project, was to fall under the exempt review criteria as listed by the Institutional Review Board. This research project, according to the definition set out by the PSU IRBSON "involves the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior AND the information is recorded in such a way that the identity of the subjects can be ascertained AND does not involve children." The PSU IRBSON Institutional Review Board was presented the project proposal for confirmation on June 30, 2022. Upon confirmation of application AS22-042 on July 5, 2022, data collection began. Subject participation and survey responses were to remain anonymous through the program for research data collection.

Instruments

This scholarly project involved facilitating the implementation of a diabetic education program into an already established clinic and then evaluating that implementation process and patient outcomes regarding diabetes self-management. Instruments that were included were a pre/post survey (Appendix A) and a demographic sheet (Appendix B). Technologies used during the program were specific to the education provided by the diabetic educator and are not relevant to the project or data collection. The instruments used for this research were not to be used outside of this project. Instruments involved through the twelve-week course were provided by the clinic and were not part of the evaluation process.

Resources that were needed for this program to be successful included a diabetic educator, materialistic things (pens, paper, handouts, tables, chairs), technology (computers, projection screens/TV's), support, and financial contributions/donations. These resources were not all necessary for the completion of the program but helped to enhance the experience for the participants. The clinic was equipped and budgeted for most materialistic expenses needed to be successful with the program. The clinic was also newly expanded and opened, which allowed ample space for one-on-one meetings as well as group meetings. The new clinic was set up with a conference room that was used for technology purposes such as PowerPoint presentations and guest speakers. Support included guest speakers, nursing help, counselors, and all outside resource. The new clinic also provided a kitchen space adequate for demonstration of cooking procedures.

Procedure

The project proposal went before the scholarly project committee for approval upon completion of chapter three. There was a written and verbal agreement made between facilitator and clinic owner/nurse practitioner regarding initiation of project and data collection. After approval, the facilitator began working to start and implement the diabetic education program at the clinic, which began in early October. Research was done using a demographic data collection sheet as well as each participant filling out a pre and post survey regarding topics that were covered during the program. To best keep the participants anonymous, they provided an anonymous identifier that they placed at the top of their survey so surveys could be compared pre and post program. The participants were not required to fill out an informed consent stating they understand the risks and benefits of participating in the project due to the project and research collection being completely voluntary.

When participants were chosen, (which they were chosen by first come first serve and word of mouth), they were given a packet of information regarding the program and given instructions to create an account through MyBodySite, what the program entails, and requirements for the research. These participants were asked to fill out an anonymous survey and demographic questionnaire (Appendix A and Appendix B). The participants chose an anonymous identifier and placed it at the top of their survey so the information could be reviewed and compared to the survey at the end of the program. The participants then completed the twelve-week program by going to the clinic once weekly for educational sessions as well as daily education from MyBodySite. This was completed by the participants while the NP followed ADA guidelines for patient participation and the set-up of weekly meetings. At completion of the program, the participants filled out the same survey they did at the beginning with the same anonymous identifier so the information could be compared.

Participants came into the clinic once a week for twelve weeks, where they were educated on eight main topics. This included (a) what is diabetes- knowledge is power and the more they understand, the easier it is to manage, (b) healthy coping- learning to manage diabetes can be emotional and learning how to deal with or overcome a problem in a healthy way is crucial to managing diabetes, (c) nutrition- healthy eating has a major effect on blood sugar and managing diabetes and developing a healthy eating pattern can influence overall health, (d) physical activity- including daily exercise is important for your health and your healthcare team is there to support, encourage, and help increase physical activity, (e) medications- taking medicine often is part of a prescribed treatment plan for diabetes meaning it is very important to take medicine in the right time, dose, and frequency, (f) monitoring- which refers to checking blood sugar levels and tracking food intake and physical activity, (g) reducing risk- practicing behaviors that minimize or prevent complications and negative outcomes of diabetes, and (h) problem solving- learning to problem solve will help when it comes to creating a diabetes self-management plan.

This educational material was given in person once weekly, as well as through MyBodySite. This is a patient portal through Enhanced Healthcare that allows patients direct access to daily information regarding diabetes education, access to their healthcare provider for questions and concerns, and access to recipes, workouts, journaling, daily tasks, and community resources. Implementing MyBodySite was crucial to the success and launch of the diabetes education program.

The information that these patients provided was optional but encouraged. The information, which entails the demographic questionnaire as well as the pre/post program survey, did not have any direct patient identifiers on it. This information was stored in a secure folder in the project advisor's office. The project can be replicated if the NP follows the same education plan for the diabetes program. The surveys can be replicated as well as the demographic questionnaire. This information was dependent on patient feedback, as was the first trial through the clinic.

Treatment of Data

A formal evaluation was obtained from participants (Appendix A) voluntarily and was used to evaluate the effectiveness of the program. The facilitator worked with the nurse practitioner and participants to have the surveys completed and returned for evaluation. Upon completion, the surveys were placed in a designated folder that was locked in the project advisor's office for facilitator pick up and evaluation. This information will be stored for three years at the PSU IRBSON in a locked filing cabinet. Upon the three-year criteria being met, the information will be shredded and destroyed.

Outcomes

Outcome data was determined by evaluation of the pre- and post-program survey for the project that answered the following questions.

1. Do patients with diabetes who attend a twelve-week diabetes education program experience an increased level of knowledge regarding the disease process once the course is completed?
2. Do patients with diabetes who attend a twelve-week diabetes education program experience an overall better quality of life than before they completed the program?
3. Do patients with diabetes who attend a twelve-week diabetes education program report higher self-management skills after the program rather than before the program?
4. Do patients with diabetes who attend a twelve-week diabetes education program report a better patient-provider relationship in terms of communication after the program rather than before the program?

Evaluation Tools

Evaluation measures for this project included using an evaluation tool (Appendix A) that was linked to the objectives of the study. The evaluation tool was administered pre and post program. Participants were asked to rate their level of agreement from one to five on the eight common outcomes related to a diabetic education program. Participants used a Likert scale using the following: 1= very low, 2= low, 3= neutral, 4= high, 5= very high. Evaluation of the outcome data was obtained in the evaluation tool.

Plan for Sustainability

Sustainability had to be reviewed when implementing this program as well as evaluating it. This program was designed to be replicated within the clinic time and time again. Creating a content structure that could be repeated, a pre/post program survey that was replicable, and assuring participant satisfaction are all things that had to happen.

Diabetes is not a condition that is going to go away and in fact, will continue to increase in number for the years to come. Providing a place in the community where patients could go and enhance their knowledge regarding the disease process and then spread that information by word of mouth will also help the sustainability of the program. If participants show up ready to participate, this program can be replicated.

Facilitating the implementation of a quality diabetes education program into Enhanced Healthcare of the Ozarks ensured that the community would continue to be cared for and patients will continue to increase their knowledge base related to their disease process. Implementation of this program to the clinic not only enhances patient outcomes but also works in favor for the clinic. This continuous cycle will ensure future participation of patients.

Summary

Helping to implement and evaluate a diabetes education program was beneficial to Enhanced Healthcare of the Ozarks, the diabetic population, as well as the community. The implementation of the diabetic education program was hard and time consuming but also necessary. Evaluating eligible patients through the clinic and word of mouth helped this program to be jumpstarted as well as will help it to be continued and replicated. Following IRB approval and necessary steps helped to protect human subjects in the study and provide confidentiality. Gaining approval for all instruments used in the survey including demographic page, pre/post surveys, and information helped protect participants and the facilitator. Following appropriate methodology and sticking to the written plan helped to make the implementation phase quicker, easier, and more efficient.

Maintaining open communication between committee members was vital to continue the success of the DNP scholarly project.

Chapter IV

EVALUATION RESULTS

The overall purpose of this project was to implement and evaluate a diabetic education program at Enhanced Healthcare of the Ozarks in Bentonville, Arkansas. As stated in the *DNP Student Handbook* (2023), the purpose of the project is to have an impact on the healthcare system and quality of care; thus, the context of outcomes must be considered. The DNP scholarly project will bring specific benefits for a group, population, community, or policy and will advance nursing practice at local, state, or national levels. This project fulfilled that by creating an education program that not only affected a specific population, those affected by diabetes but also a community at a local and state level. By creating and implementing this diabetic education program, it allowed for another area for diabetics to go to receive education about their disease process and to be put in touch with more local resources to help them navigate their journey.

The project questions that guided this scholarly project are the following:

1. Do patients with diabetes who attend a twelve-week diabetes education program experience an increased level of knowledge regarding the disease process once the program is completed?
2. Do patients with diabetes who attend a twelve-week diabetes education program experience an overall better quality of life than before they completed the program?

3. Do patients with diabetes who attend a twelve-week diabetes education program report higher self-management skills after the program rather than before the program?
4. Do patients with diabetes who attend a twelve-week diabetes education program report a better patient-provider relationship in terms of communication after the program rather than before the program?

Sample Population

Participants of the diabetic education program were current patients of Enhanced Healthcare of the Ozarks, diagnosed with diabetes and interested in completing a twelve-week program with a pre- and post-survey. The recruitment process was mainly word of mouth of the NP discussing the programs to diabetic patients, finding participants that were already patients at the clinic, and then moving out into the community using the snowball technique, until at least ten participants were found to fill out to pre- and post-survey and complete the twelve-week program. The total number of participants was ten, due to this being the first round of the program and the NP wanting a small number to trial it. These participants filled out an anonymous demographic's questionnaire at the beginning of the program to give the researcher more of an idea of who was part of the study. The length of time it took to collect data was right around the twelve-week mark. Participants filled out the pre-survey and demographic questionnaire at the start of the program and then completed the post-survey at the completion of the program, which spanned a total of twelve-weeks.

The demographics questionnaire revealed a lot of data on the participants. Of the participants, sixty percent were female, and forty percent were male. Of the females, ages ranged from 18-54 years old, and all managed their own diabetes. Of the women, four were on Insulin for their diabetes, whereas one was on Metformin, and one was on Starlix. Race of these participants included white (n = 4), Asian (n = 1), and African American (n = 1) and none had ever participated in a diabetic education program. They also noted they heard of the program through mainly word of mouth. Of the males, ages ranged from 18-74 years old, and 75% of them managed their own diabetes. Of these men, two took Insulin for their diabetes, one took Sulfonylureas, and one was not taking any medication to manage. Race of these participants were white (n = 4), and none had ever participated in a diabetic education program. These men also noted they heard of the program through mainly word of mouth.

Through the program, participants were able to learn educational material through individual and group sessions. The participants totaled six Type 1 diabetics and four type 2 diabetics, but most of the education taught was the same. The major differences to that education material were disease process altering slightly as well as medication choices. Many of these participants were struggling with other chronic conditions, which is why nutrition, follow-up care, and community resources were all still included in teaching sessions.

Analyses of Project Questions

The pre- and post-survey consisted of eight questions ranging from quality of life to relationships with providers. For this project, the focus was on the four main project questions listed above. This program ended up being very successful for the first round of patients, and there was found to be an increased overall experience for all the participants following the descriptive statistics analysis. The research showed that patients who attended the twelve-week diabetic education program had an increased level of knowledge regarding their disease process, had an increase in quality of life, reported higher self-management skills, and reported a better patient-provider relationship in terms of communication once the program was complete based off of the descriptive statistics analysis. This was the hypothesis prediction from the facilitator and was shown to be successful for this first-time program and for these ten participants.

Data Analysis

Around the time of registration for these participants, they were handed a pre-program survey as well as a demographic questionnaire and were told about the research project on the program. Completion of these pages was anonymous and completely voluntary. Of the 10 participants to complete the program, all 10 of them completed the survey and demographic questionnaire resulting in a one hundred percent response rate. The survey consisted of eight questions, all relating to patient perception of their disease process, self-management techniques, and relationships.

To answer project questions on the pre- and post-survey, participants were asked to rate a series of statements on a scale of 1 to 5 as follows: 1= very low; 2= low; 3= neutral; 4= high; 5= very high. Each statement relevant to the project questions is provided below along with an analysis of responses.

The first statement in the diabetic education program survey stated, “I am confident in understanding how to monitor my glucose at all times.” As one can see in Table 1 below, pre-survey showed 90% of responses as neutral and high, where post-survey showed 100% neutral, high, and very high. The mean value from the descriptive analysis showed a response of 3.5 pre-program survey and a response of 4 post-program survey.

Table 1

Question One

"I am confident in understanding how to monitor my glucose at all times."		
Likert Scale	Pre-Survey	Post-Survey
1 = very low	10% (n = 1)	0%
2 = low	0%	0%
3 = neutral	20% (n = 2)	20% (n = 2)
4 = high	70% (n = 7)	60% (n = 6)
5 = very high	0%	20% (n = 2)

The second statement in the diabetic education program survey stated, "I am satisfied with the relationship I have with my physician and the channel of communication between my provider and I regarding diabetes management." Respondents, as stated below in the pre-survey reported 20% as neutral and 80% high or very high. Post-survey showed 0% in the neutral zone, 40% in the high and 60% in very high. The mean value from the descriptive analysis showed a response of 4 pre-program survey and a response of 4.6 post-program survey.

Table 1

Question Two

"I am satisfied with the relationship I have with my physician and the channel of communication between my provider and I regarding diabetes management."		
Likert Scale	Pre-Survey	Post-Survey
1 = very low	0%	0%
2 = low	0%	0%
3 = neutral	20% (n = 2)	0%
4 = high	60% (n = 6)	40% (n = 4)
5 = very high	20% (n = 2)	60% (n = 6)

The third statement in the diabetic education program survey stated, "I feel that I use available clinical services appropriately." Shown in the table below, pre-survey showed respondents answered 60% as neutral or low and 40% high or very high, where post-survey showed only 20% as neutral or low and 80% high or very high. The mean value from the descriptive analysis showed a response of 3.4 pre-program survey and a response of 4.2 post-program survey. Part of the program was learning communication with providers and being confident in understanding their disease process, which helped patients know what questions to ask and what to look for.

Table 2

Question Three

"I feel that I use available clinical services appropriately."		
Likert Scale	Pre-Survey	Post-Survey
1 = very low	0%	0%
2 = low	10% (n = 1)	10% (n = 1)
3 = neutral	50% (n = 5)	10% (n = 1)
4 = high	30% (n = 3)	30% (n = 3)
5 = very high	10% (n= 1)	50% (n = 5)

The fourth and final statement listed for research on the program survey stated, "I believe I have a high quality of life living with diabetes." The table below shows a small increase in the number of participants who increase their quality of life. Pre-program survey showed 70% as neutral or low and 30% high, whereas post-program survey revealed 50% as neutral or low and 50% high. The mean value from the descriptive analysis showed a response of 3.2 pre-program survey and a response of 3.4 post-program survey.

Table 3

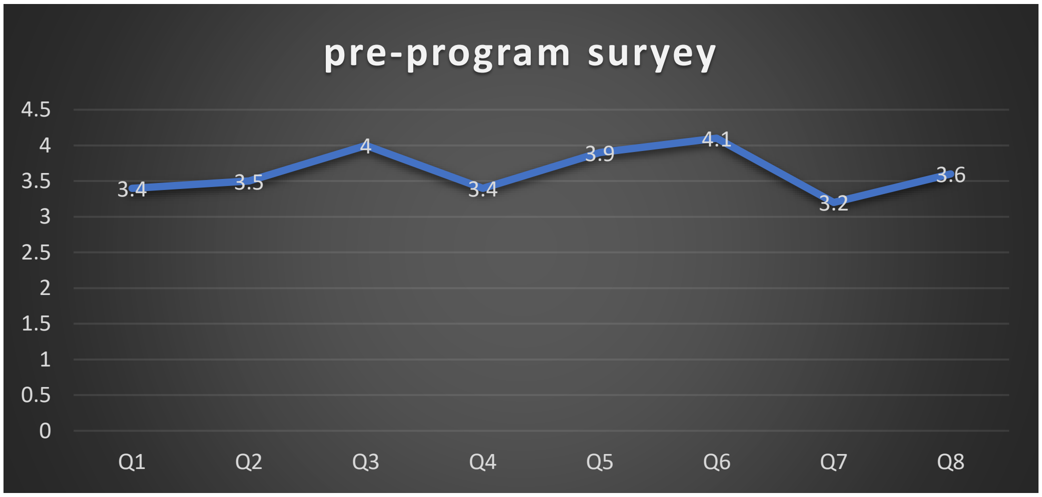
Question Four

"I believe I have a high quality of life living with diabetes."		
Likert Scale	Pre-Survey	Post-Survey
1 = very low	0%	0%
2 = low	10% (n = 1)	10% (n = 1)
3 = neutral	60% (n = 6)	40% (n = 4)
4 = high	30% (n = 3)	50% (n =5)
5 = very high	0%	0%

By having participants use an anonymous identifier on the top of their pre- and post-survey, answers were able to be directly matched up and analyzed. The results, using a descriptive analysis, showed that every participant either remained the same or increased their answer on the Likert scale to every statement on the survey. No participant listed an answer lower than when they started the program, which shows an overall success for every outcome. Shown below is the mean total for pre- and post-program survey answers for the eight questions.

Figure 2

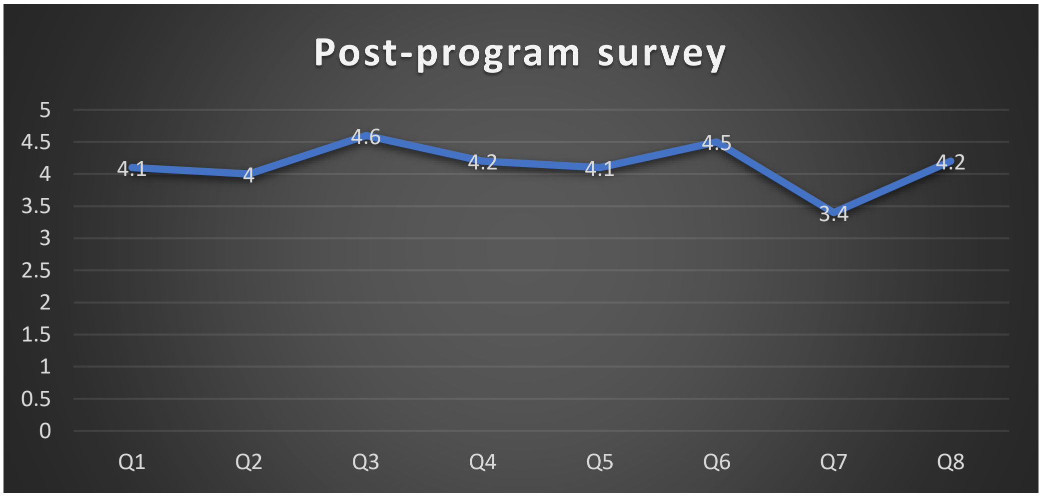
Pre-Program Survey



This was found by averaging the response to each individual question and then linking it with the appropriate Likert Scale number. The range of answers on the Likert scale was 4. That number was then divided by the highest possible answer, which was 5, and ended with a result of 0.8. To calculate the ranges of responses for calculation, 1 was correlated with answers 1-1.8, 2 was correlated with answers 1.9-2.6, 3 was correlated with answers 2.7-3.4, 4 was correlated with answers 3.5-4.2 and 5 was correlated with answers 4.3-5.0. Results showed that over the eight statements on the pre-program survey, 32.5% of answers fell in the neutral category (3), and 62.5% of answers fell in the high category (4). Results showed that over the eight statements on the post-program survey, 12.5% of answers fell in the neutral category (3), 62.5% of answers fell in the high category (4), and 25% of answers fell in the very high category (5).

Figure 3

Post-Program Survey



Summary

The project's primary purpose was creating and implementing a diabetic education program that overall showed an increase in four main project outcomes. The purpose of this project was achieved through the successful completion of a 12-week diabetic education program. Before and after the program, participants completed a pre- and post-program survey answering eight different statements and ranking them on a Likert Scale from one to five. One hundred percent of participants that went through the first cohort of the program completed the surveys along with a demographic sheet. Overall, the program was a success based on participant responses increasing over the Likert scale from pre-program survey to post-program survey and is now integrated as an important part of Enhanced Healthcare of the Ozarks. Further discussion of results will be provided in Chapter V.

Chapter V

DISCUSSION

This project aimed to implement and evaluate a diabetic education program at Enhanced Healthcare of the Ozarks in Bentonville, Arkansas. At the completion of the diabetic education program, participants answered four research statements that included having an increased level of knowledge regarding their disease process, experiencing an overall better quality of life, reporting high self-management skills of their diabetes, and reporting a better patient-provider relationship in terms of communication.

Patients/participants participated in a pre-program survey and demographic sheet that was filled out anonymously and confidentially. They then met once a week for 12-weeks until the completion of the diabetes education program that followed ADA guidelines and was taught by a certified diabetic educator. Upon successful completion of the program, participants then filled out a post-program survey that matched the pre-program survey to see if responses improved from beginning to end. Participation in the diabetic education program as well as pre- and post-program survey was completely voluntary. The survey and demographic sheet that was completed by these participants was reviewed and approved by the IRB within the IRBSON and the University IRB at Pittsburg State University.

Relationship of Outcomes to Research

The purpose of the study was to have an increase in mean responses of the four project outcomes, from pre-program survey to post-program survey questions that showed the successful implementation of the diabetic education program. Using a pre- and post-program survey helped to evaluate the diabetic education program and help to set standards for future cohorts of patients. It also evaluated the information that was being shared during the program to make sure it was relevant. Throughout the project, it was discovered that diabetes education programs are hard to find, hard to implement, and are hard for participants to get involved in. (Powers et al., 2016, p. 75). It was anticipated that participants would find a perceived benefit from the diabetic education program and that the project questions would all be answered as a ‘yes’ to some degree. Using a Likert scale to evaluate data obtained from patients participating in the program helped to better place a number interval to the answers that were given.

Question one of this research project asked, “Do patients with diabetes who attend a twelve-week diabetes education program experience an increased level of knowledge regarding the disease process once the program is completed?” To answer this question, the statement “I am confident in understanding how to monitor my glucose at all times” was stated on the pre- and post-program survey. This statement was made due to all patients needing to understand how to monitor and evaluate their glucose as a way of better understanding their disease process. Results supported this finding by showing an increase in frequency of response rates falling in the very high category as shown above.

Question two of this research project asked, “Do patients with diabetes who attend a twelve-week diabetes education program experience an overall better quality of life than before they completed the program?” To answer this question, the statement “I believe I have a high quality of life living with diabetes” was evaluated. Patients reported a higher quality of life after the program than before, which was expected from the project questions. According to Powers et al. (2016) “overall objectives of a DSME program are to support informed decision making, self-care behaviors, problem solving, and active collaboration with the health care team and to improve clinical outcomes, health status, and quality of life” (p. 71).

The third question of this research project asked, “Do patients with diabetes who attend a twelve-week diabetes education program report higher self-management skills after the program rather than before the program?” To answer this question, the statement “I feel that I use available clinical services appropriately” was used. Having patients understand their disease process and then further understand what resources are available to them, helps to better show their understanding of diabetes. Olson & Rosenberg (2019) state that “nurses need to confirm the patient is not alone and encourage him or her to take advantage of the resources to continue to learn, adapt to lifestyle changes, and feel empowered to meet goals” (p. 320). Teaching these patients what was available to them in their community was a top priority during this program. Table 3 shows the results supported this finding by showing an increase in frequency of response rates falling in the very high categories and dropping in the neutral category as shown above.

The fourth and final question of this research project asked, “Do patients with diabetes who attend a twelve-week diabetes education program report a better patient-provider relationship in terms of communication after the program rather than before the program?” To evaluate this question, the statement “I am satisfied with the relationship I have with my physician and the channel of communication between my provider and I regarding diabetes management" was used. Table 2 shows the results supported this finding by showing an increase in frequency of response rates landing in the high category and dropping in the neutral category. Research from Powers et. al (2016) shows that "clear communication and effective collaboration among the health care team that includes a provider, an educator, and a person with diabetes are critical to ensure that goals are clear, that progress toward goals is being made, and that appropriate interventions (educational, psychosocial, medical, and/or behavioral) are being used" (pp. 71-72).

Outcomes of this research project matched the expected outcomes due to the fact of prior evidence-based research showing the positive impacts of diabetes education programs being implemented correctly. Powers et al., (2016) supports that "in order for people to learn the skills necessary to be effective self-managers, DSME is critical in laying the foundation with ongoing support to maintain gains made during education" (p. 78). Research on this topic is broad and leaves a lot of room for personal implementation strategies, but overall, the effects of diabetic education programs have all been shown to be positive for the patient. Knowing this information, it was expected that there would be an increase in Likert scale numbers from one to five in the project questions from pre-program survey to post-program survey, and there was. The project was slightly limited due to the number of participants, but that was nothing abnormal from other research that had been done with evaluating diabetic education programs. According to Powers et al., (2016) "despite proven benefits and general acceptance, the numbers of patients who are referred to and receive DSME/S are disappointingly small” (p. 78). Outcomes with this project were all expected and highly welcomed.

Observations

There are many observations to reflect on after the course of this project. One observation to note is that the completion rate from participants during this first cohort of patients was 100%. It was expected that this evaluation tool might have had to be used through two or more cohorts before reaching the desired number of participants needed for the research to be evaluated. The number of participants was determined by the NP of the clinic and the maximum number of participants she was willing to take. It was very rewarding to find that all 10 of the first participants were so eager and on board to complete the surveys and demographics sheet. This made the research collection portion of the project much faster than expected. There are many reasons for a high completion rate with the first cohort, many due to the relationship these patients had with the diabetic educator as well as the support and enthusiasm they had for beginning a diabetic education program. The feedback on the survey submissions and demographics were anonymous but did contain an anonymous identifier consisting of two letters and two numbers, only for the purpose of comparing pre- and post-survey answers for each individual question.

Overall, there was an increase of scores from one to five on the Likert scale on all eight questions of the survey, even though only four questions were used for the purpose of the research project. This data was also given to the diabetic educator for personal knowledge and understanding how participants felt and that the information given during the program did make a difference in many aspects of their healthcare journey. Using a pre- and post-program survey with anonymous identifier allows for this program to be replicated and then continually evaluated using the same tool. This allows for better understanding of each patient and comparison of answers from one person as well as overall statistics. The outcomes of this study were reassuring for the facilitator as well as the NP and owner of Enhanced Healthcare of the Ozarks, where the program was implemented and will continue to be conducted.

Evaluation of Theoretical Framework

Watson's philosophy and science of caring theoretical framework is supported and relative to the concepts is this DNP scholarly project. The overview of Watson's theory is how nurses and healthcare providers provide care to their patients. The theory has four major concepts: human being, health, environment/society, and nursing. Through the project, the NP took special consideration with each participant and tailoring the education to the needs of everyone separately. This was done by addressing their needs at each visit, answering all questions they had, and making sure they understood the education and treatment plan before they left the clinic. This theory focuses on the human being/patient, which was highly supported throughout the program. Health is another concept through the theory and was shown as improved from the Likert results from the pre- and post-program survey. Environment and society were improved just with the implementation of this diabetic education program alone. Providing a new educational space for diabetics that is covered through insurance and follows ADA guidelines helps to support these patients and better educate them on their disease process. Nursing is also impacted, which is a main concept of this theory. The nurses and NP’s that teach the program now and, in the future, will have an increase in knowledge regarding diabetes, as well as continued education for themselves.

Watson's model has seven major assumptions, with six of them being viable to be used for this project. They are as follows: "1.Caring consists of caritive factors that result in the satisfaction of certain human needs, 2. Effective caring promotes health and individual or family growth, 3. Caring responses accept the patient as he or she is now, as well as what he or she may become, 4. A caring environment is one that offers the development of potential while allowing the patient to choose the best action for him or herself at a given point in time, 5. A science of caring is complementary to the science of curing, 6. The practice of caring is central to nursing" (Petiprin, 2020). These assumptions helped to build the foundation for the program.

Evaluation of Logic Model

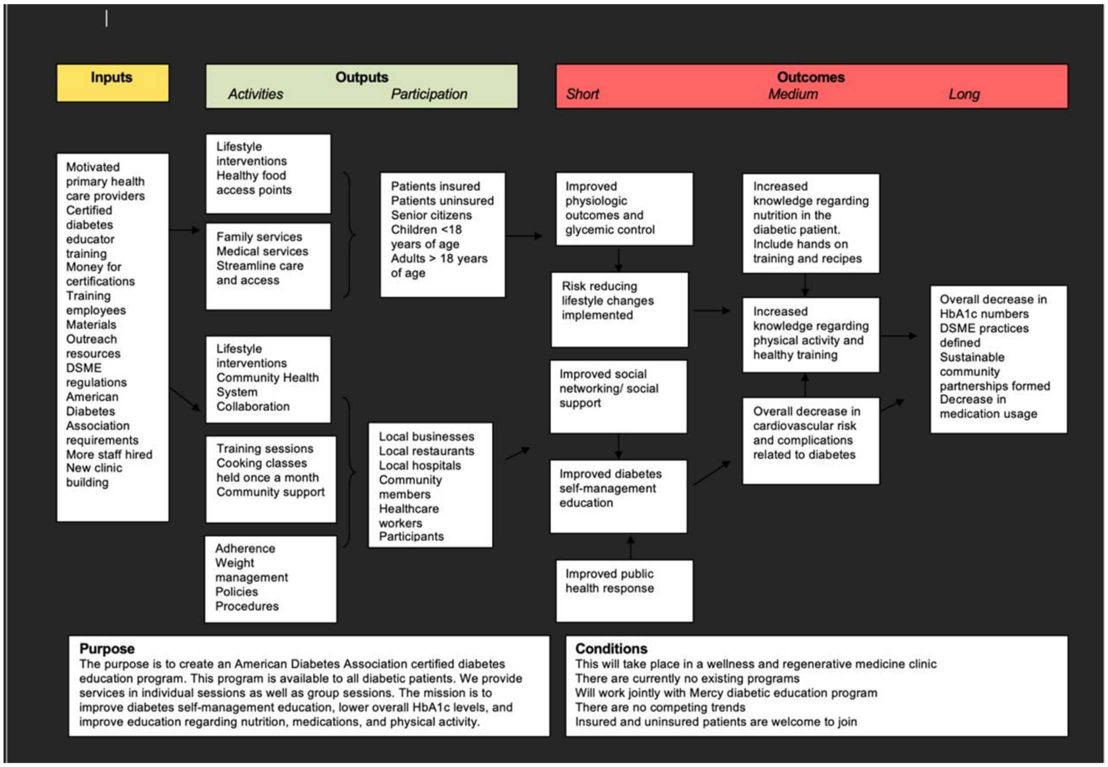
This was a very complex logic model that was created with short-, intermediate-, and long-term outcomes in mind. Overall, project results supported those outcomes. Short outcomes that were evaluated included that of improving glycemic control, lifestyle changes implemented that reduced risk, improvement of social networking, improved diabetes self-management education, and improved public health response. These short-term outcomes were a success and could be evaluated from the pre- and post-program survey. Intermediate outcomes evaluated included: increased knowledge regarding nutrition in diabetic patients, increased knowledge regarding physical activity, and overall decrease in cardiovascular risk related to diabetes. Completing the program allowed for an increase in both of those knowledge bases and therefore should help to lead patients in the direction of lowering cardiovascular risk related to their disease. This is not an outcome that would be able to be evaluated in one cohort or in one project completion. The long-term outcome was to see an overall decrease in HbA1c and decrease in medication usage. These things were to be evaluated but denied by the IRB due to patient confidentiality issues, therefore information was not gathered regarding HbA1c levels. This is something the NP could track and evaluate over time since she is allowed access to medical records and does not maintain confidentiality with these patients.

The purpose of the study is clearly identified by the logic model as well as the conditions that the project took place. These conditions include implementing the program into a wellness clinic, having no competing trends, potentially working with Mercy diabetic education program, and caring for insured and uninsured patients. These conditions were all met except for working alongside Mercy Hospital. This program was implemented and created specifically for Enhanced Healthcare of the Ozarks and is unique to the resources available to that clinic as well as to the NP who owns the clinic and the educators that she has available to run the program.

This project identified and anticipated the relationship between the purpose, inputs, outputs, conditions, and outcomes. The overall purpose of the project, the implementation of the diabetic education program, and short- intermediate- and long-term outcomes were mostly achieved as displayed in the logic model below.

Figure 4

Logic Model



Purpose
The purpose is to create an American Diabetes Association certified diabetes education program. This program is available to all diabetic patients. We provide services in individual sessions as well as group sessions. The mission is to improve diabetes self-management education, lower overall HbA1c levels, and improve education regarding nutrition, medications, and physical activity.

Conditions
This will take place in a wellness and regenerative medicine clinic
There are currently no existing programs
Will work jointly with Mercy diabetic education program
There are no competing trends
Insured and uninsured patients are welcome to join

Limitations

As with any project, this one came with limitations. The first and most prominent limitation to this study was the number of participants that research was conducted on. Due to the nature of the project and the launch of the program itself, the clinic only allowed for ten members in the first cohort. This was due to space in the clinic at the time as well as resources available, providers available, and anticipated success or failure for the launch. Implementing the new program into the clinic came with many doubts and adding the research project on top of the implementation left ample room for lack of participation and completion by participants. This limitation did not create a challenge overall for research conduction, due to the sample size being set at 10 from the beginning. There was anticipation that the facilitator would need multiple cohorts to complete the needed amount of participation, but that ended up not being the case.

When reflecting on other limitations to the study, facilitator involvement in-person comes to mind. This project was started when the facilitator was living in the state it was being implemented, but by the end was no longer living in Arkansas. This left a lot of room for potential error in terms of implementation of the program, communication barriers, and lack of interaction with the participants themselves. The facilitator was not able to be directly involved in the program launch or the educational sessions that the participants were involved in. This further lead to taking the word of the NP that patients were showing up to weekly sessions and participating in the educational sessions. The method of sampling did not introduce bias, as the facilitator was not directly involved with the participants and the data collection was confidential and voluntary. Therefore, the sampling instrument (survey) was not a limitation to this project. A limitation with the NP being more involved is that these were already established patients of hers. This could have had the potential impact on their responses being positive post-program, even though answers were kept confidential.

Time and resources were a potential barrier and limitation to this project. However, research was able to be completed within the first cohort that lasted three months, or the entirety of the twelve-week program. Resources were a potential limitation to this project, as space was an issue for the first cohort. The clinic has since moved locations and provides a much larger area for learning and involvement of participants. There are also more resources available at the new clinic involving more healthcare workers, community outreach sources, and larger sample sizes being tended to.

While the demographics of participants are known and interesting to the program, the inclusion of the demographic questionnaire wasn't essential to answering the project questions. Although the overall demographics of the program participants are known and interesting to the program, there is no correlation between them and the research outcomes. The only criteria that had to be met included that stated above from the IRB exclusion criteria. The demographics page is also irrelevant for the NP at the clinic who is permanently implementing this program. Participants have no limitations to joining the program, the only limitations came during the first cohort when restrictions were placed from the IRB.

The research helped to guide the NP in the final direction for the implementation of the program. Since the research has been collected, there has already been a second cohort that has completed the program. This cohort was not part of the research project and was not involved in the pre- and post-program survey or demographics page.

Implications for Future Research

The need for diabetic education programs will continue to increase, and the number of diabetic patients will also continue to increase. It is expected that in 2035, 471 million people will be diagnosed with diabetes (Cavicchioli et al., 2019). There is already a shortage of providers willing to take the time to teach newly diagnosed diabetics about their disease process, let alone have the resources to send a newly diagnosed patient to an education program. Practice improvement will be directed at standardizing the diabetes education program based on the American Diabetes Association guidelines and continuing education of healthcare workers and diabetic educators. Improving on the design of the project would only include being more directly involved. This involvement includes creating patient education sessions, teaching patients, becoming diabetic educator certified, and having more cohorts of patients completed the program survey and demographics page. Another small improvement that could be made is adding in a comment box to the end of the pre- and post-program survey. This would allow for real time feedback and a place for patients to write out their thoughts or provide comments to the facilitator about the program itself. Having these improvements would help give continuous feedback to the facilitator and help shape the program into the best version of itself.

The project has the ability to be replicated and repeated with each new diabetic encounter, patient willing. To date, the program is in the process of being repeated, but details of the second cohort are unknown, and research was not completed on these participants. Feedback from the survey was given to the NP of the clinic and taken into consideration for the next round of the program. The sample will always be ‘different’ as each patient is unique and presents with their own opinions, beliefs, and needs. Sample size will also be adjusted based on healthcare team members present, resources available, and participants willing to complete the twelve-week education program. Additional knowledge needed for this project includes more education for the facilitator, which is getting a diabetic educator certification. Expansion of the project would be more hands-on learning projects for the patients, which would include learning how to cook certain meals and actively getting to do so in the clinic as well as tracking macro and micronutrients into a food log. This would introduce another learning style into the program as well as give participants a more hands on experience to managing their diabetes.

Implications for Education

This project has clinical, health policy, and educational implications. Learning how to better serve the diabetic population and better create and utilize diabetic education programs will enhance not only the providers caring for the patients, but the quality of life for these patients. Creating educational content and following evidence-based practice will better enhance self-management techniques and understanding of the disease process. It is important for the clinical, healthy policy and educational implications to be understood entirely and executed well.

Clinical

Clinical implications are for the nurse practitioner specifically. Continuing education is a requirement in all states, but understanding the importance of disease-specific training is of top priority. Becoming a certified diabetic educator is a requirement for implementation of a diabetic education program and must be taken seriously by the provider giving the education to patients and participants. Understanding how to maintain patient privacy and confidentiality when evaluating the program is encompassed in the clinical implication and is important when trying to replicate and better the program.

Health Policy

Health policy implications include funding and coverage from insurance that allows patients to participate in diabetic education programs. The importance of learning self-management techniques can and will be the difference for many factors, including healthcare coverage cost, out-of-pocket expenses for patients, and other psychosocial factors including stress levels, and family relationships. Advanced practice nurses can continue to create and implement diabetic education programs which allow for Medicare and Medicaid to cover. Creating more of these programs and increasing awareness will only help more and more insurance companies to take on the responsibility of covering the cost for self-management skills.

Education

The implications for education with this project work hand in hand with health policy and clinical implications. For someone to understand implications of the project, they must be fully educated. The educational piece goes farther than just basic education of nurse practitioners but extends into diabetes specific training and understanding. Implementation and evaluation of a diabetes education program is required from an advanced practice nurse that is highly qualified to educate and care for diabetes patients.

Conclusion

The overall purpose of this project was to implement and evaluate a diabetic education program at Enhanced Healthcare of the Ozarks in Bentonville, Arkansas. As stated in the DNP Student Handbook (2023), the purpose of the project is to have an impact on the healthcare system and quality of care; thus, the context of outcomes must be considered. The DNP scholarly project will bring specific benefits for a group, population, community, or policy and will advance nursing practice at local, state, or national levels. This project fulfilled that by creating an education program that not only affected a specific population, those affected by diabetes, but also a community at a local and state level. Nursing knowledge was expanded and will help to create a new space for diabetic patients, where they can go and learn new techniques to better self-manage their disease process. Based on participant’s feedback, the first round of the program was very successful and has since been replicated by the NP. Continuing to follow guidelines provided by the ADA, providing a safe and trustworthy space for participants, and expanding the nursing knowledge will help to ensure this program is continued for many years and will help to change the lives of many diabetic patients.

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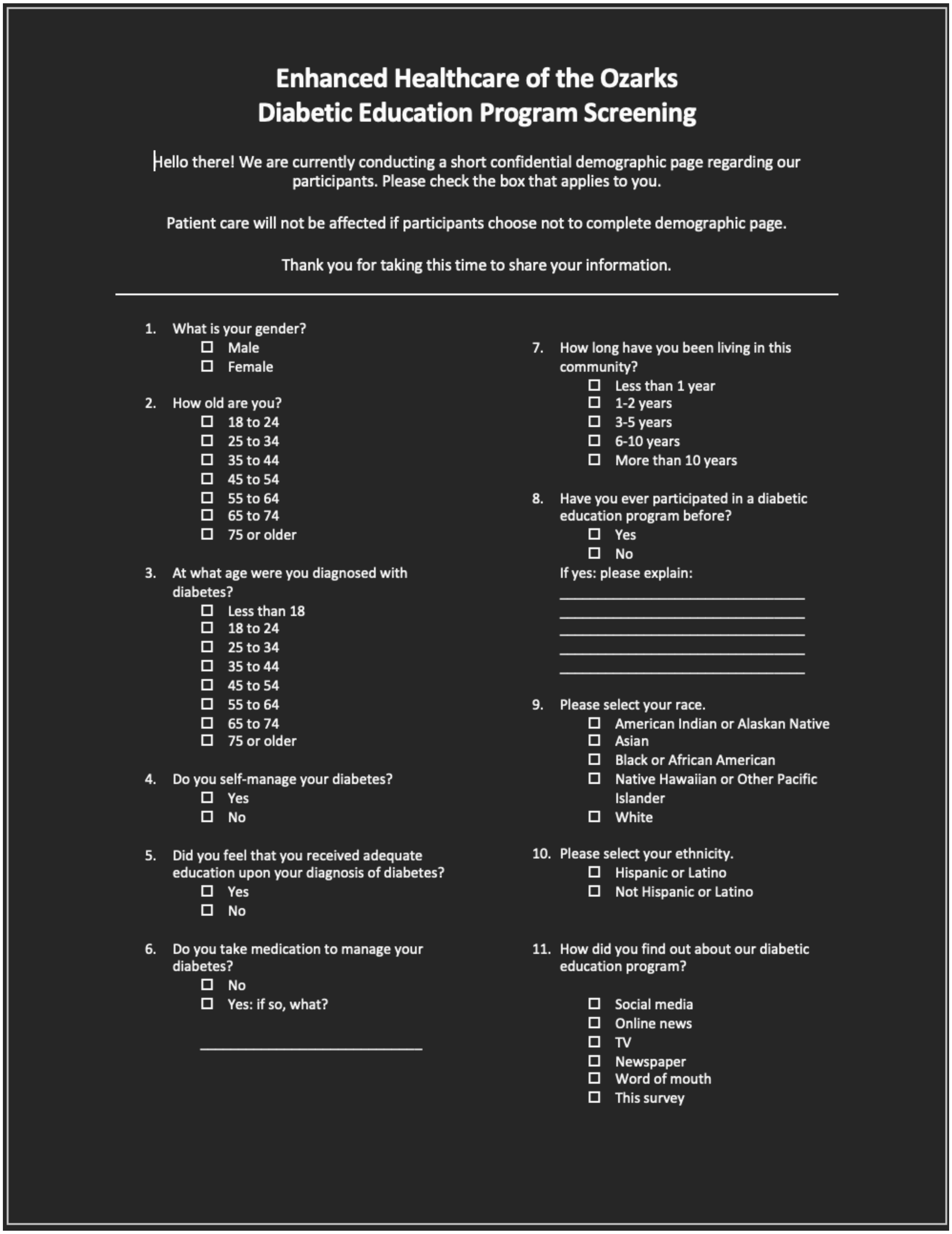
Learning.

APPENDIX

Appendix A

Diabetic Education Demographic Screening Page



Enhanced Healthcare of the Ozarks
Diabetic Education Program Screening

Hello there! We are currently conducting a short confidential demographic page regarding our participants. Please check the box that applies to you.

Patient care will not be affected if participants choose not to complete demographic page.

Thank you for taking this time to share your information.

---

1. What is your gender?
   - ☐ Male
   - ☐ Female
2. How old are you?
   - ☐ 18 to 24
   - ☐ 25 to 34
   - ☐ 35 to 44
   - ☐ 45 to 54
   - ☐ 55 to 64
   - ☐ 65 to 74
   - ☐ 75 or older
3. At what age were you diagnosed with diabetes?
   - ☐ Less than 18
   - ☐ 18 to 24
   - ☐ 25 to 34
   - ☐ 35 to 44
   - ☐ 45 to 54
   - ☐ 55 to 64
   - ☐ 65 to 74
   - ☐ 75 or older
4. Do you self-manage your diabetes?
   - ☐ Yes
   - ☐ No
5. Did you feel that you received adequate education upon your diagnosis of diabetes?
   - ☐ Yes
   - ☐ No
6. Do you take medication to manage your diabetes?
   - ☐ No
   - ☐ Yes: if so, what?

   ____

7. How long have you been living in this community?
   - ☐ Less than 1 year
   - ☐ 1-2 years
   - ☐ 3-5 years
   - ☐ 6-10 years
   - ☐ More than 10 years
8. Have you ever participated in a diabetic education program before?
   - ☐ Yes
   - ☐ No

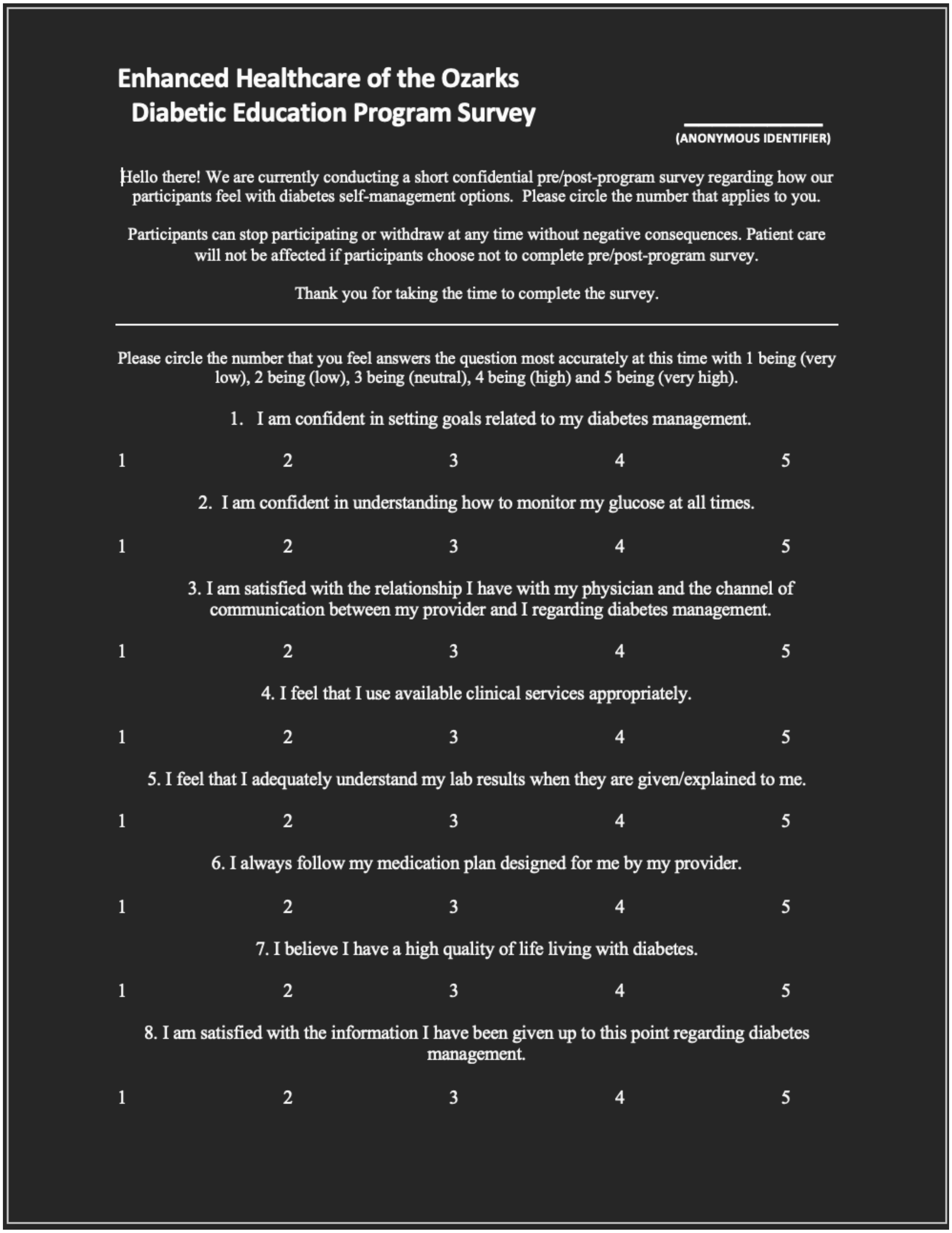
   If yes: please explain:

   ____
   ____
   ____
   ____
   ____

9. Please select your race.
   - ☐ American Indian or Alaskan Native
   - ☐ Asian
   - ☐ Black or African American
   - ☐ Native Hawaiian or Other Pacific Islander
   - ☐ White
10. Please select your ethnicity.
    - ☐ Hispanic or Latino
    - ☐ Not Hispanic or Latino
11. How did you find out about our diabetic education program?
    - ☐ Social media
    - ☐ Online news
    - ☐ TV
    - ☐ Newspaper
    - ☐ Word of mouth
    - ☐ This survey

Appendix B

Diabetic Program Pre/Post Program Survey



Enhanced Healthcare of the Ozarks
Diabetic Education Program Survey

____
(ANONYMOUS IDENTIFIER)

Hello there! We are currently conducting a short confidential pre/post-program survey regarding how our participants feel with diabetes self-management options. Please circle the number that applies to you.

Participants can stop participating or withdraw at any time without negative consequences. Patient care will not be affected if participants choose not to complete pre/post-program survey.

Thank you for taking the time to complete the survey.

Please circle the number that you feel answers the question most accurately at this time with 1 being (very low), 2 being (low), 3 being (neutral), 4 being (high) and 5 being (very high).

1. I am confident in setting goals related to my diabetes management.

1 2 3 4 5

2. I am confident in understanding how to monitor my glucose at all times.

1 2 3 4 5

3. I am satisfied with the relationship I have with my physician and the channel of communication between my provider and I regarding diabetes management.

1 2 3 4 5

4. I feel that I use available clinical services appropriately.

1 2 3 4 5

5. I feel that I adequately understand my lab results when they are given/explained to me.

1 2 3 4 5

6. I always follow my medication plan designed for me by my provider.

1 2 3 4 5

7. I believe I have a high quality of life living with diabetes.

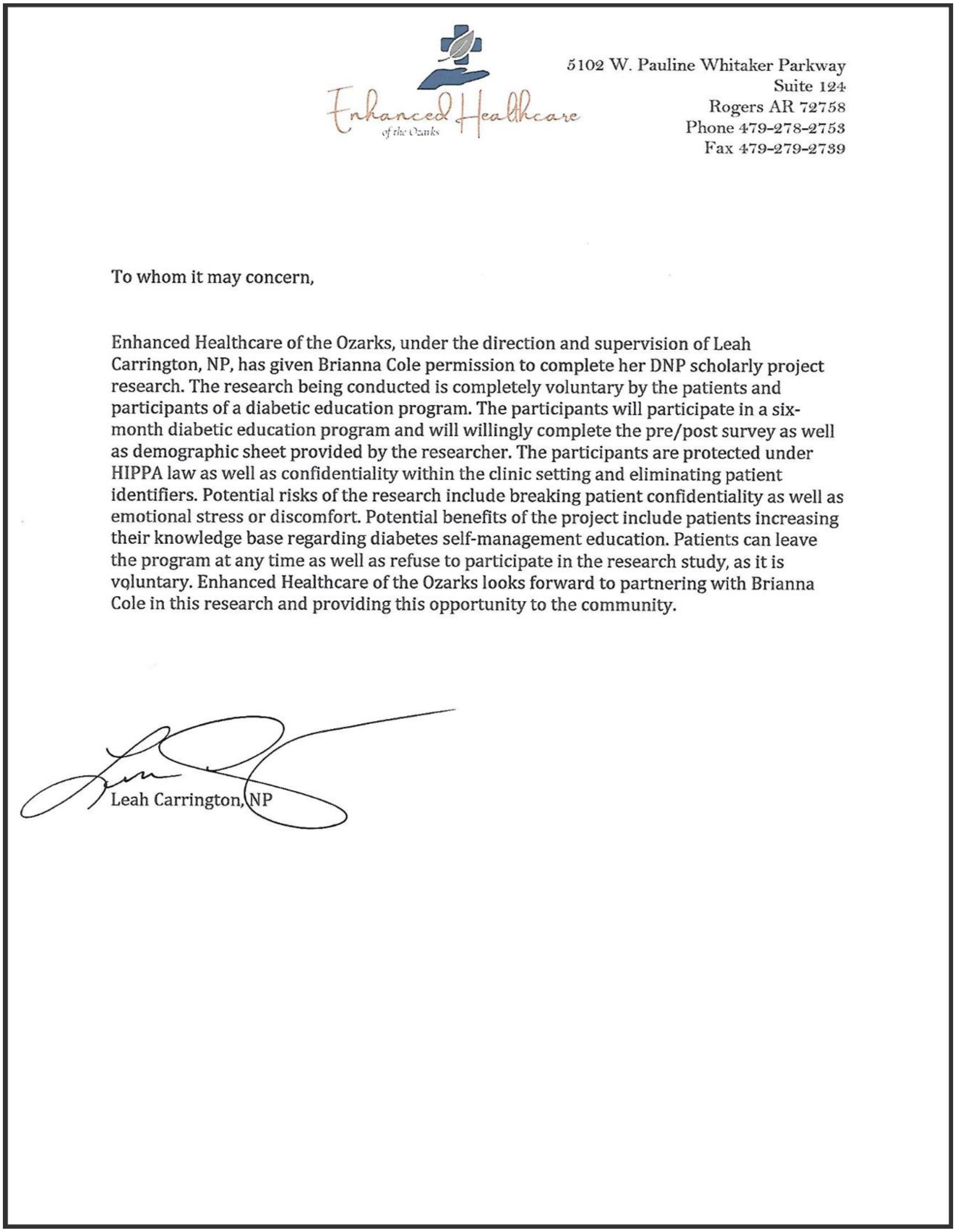
1 2 3 4 5

8. I am satisfied with the information I have been given up to this point regarding diabetes management.

1 2 3 4 5

Appendix C

Research Collection Agreement



Enhanced Healthcare
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To whom it may concern,

Enhanced Healthcare of the Ozarks, under the direction and supervision of Leah Carrington, NP, has given Brianna Cole permission to complete her DNP scholarly project research. The research being conducted is completely voluntary by the patients and participants of a diabetic education program. The participants will participate in a six-month diabetic education program and will willingly complete the pre/post survey as well as demographic sheet provided by the researcher. The participants are protected under HIPPA law as well as confidentiality within the clinic setting and eliminating patient identifiers. Potential risks of the research include breaking patient confidentiality as well as emotional stress or discomfort. Potential benefits of the project include patients increasing their knowledge base regarding diabetes self-management education. Patients can leave the program at any time as well as refuse to participate in the research study, as it is voluntary. Enhanced Healthcare of the Ozarks looks forward to partnering with Brianna Cole in this research and providing this opportunity to the community.

Leah Carrington, NP